Six-year follow-up of a left ventricular pseudoaneurysm without surgical repair

Chaohui Jiang MD PhD^{1,2,4}, Rong Zhao MD³, Xiangjun Yang MD PhD⁴

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Pseudoaneurysm of the left ventricle is a rare complication of acute myocardial infarction. The present report describes the unusual case of a 75-year-old woman who survived six years with an unrepaired left ventricular pseudoaneurysm. The diagnosis of pseudoaneurysm was made after two-dimensional echocardiography showed an extra large chamber next to the posterolateral region of the left ventricle with a massive thrombus; the diagnosis was confirmed by magnetic resonance imaging four years later. The patient refused surgical repair and continued with acetylsalicylic acid, a beta-blocker and an angiotensin II receptor antagonist. The patient was essentially asymptomatic and followed at six-month intervals until she died of carcinoma of the urinary bladder in the sixth year. The present case indicates that surgery is not the only therapeutic option in patients with a ventricular pseudoaneurysm.

Key Words: Cardiac rupture; Echocardiography; Magnetic resonance imaging; Myocardial infarction; Ventricular pseudoaneurysm

Left ventricular (LV) pseudoaneurysm is an unusual but important complication of acute myocardial infarction (MI). The propensity for fatal ventricular rupture is estimated to be approximately 7% (1,2). Knowledge of the natural history of patients with postinfarction LV pseudoaneurysm is limited. We report the case of an elderly woman who survived asymptotically for six years with an unrepaired pseudoaneurysm.

CASE PRESENTATION

A 75-year-old woman was admitted to Anshan City Centre Hospital (Anshan, China) 2 h after the onset of syncope on September 30, 1999. The patient had sustained an acute, non-ST elevation MI two weeks previously and had been discharged from the same hospital only 36 h previously. Echocardiography and a barium meal test were normal during that hospitalization. A physical examination revealed findings consistent with hemorrhagic shock. There were harsh systolic and diastolic murmurs, which were heard best at the apex and

Le suivi d'un pseudoanévrisme ventriculaire gauche sans réfection chirurgicale pendant six ans

Le pseudoanévrisme du ventricule gauche est une complication rare de l'infarctus aigu du myocarde. Le présent rapport décrit le cas inhabituel d'une femme de 75 ans qui a survécu six ans avec un pseudoanévrisme ventriculaire gauche sans réfection. On a posé le diagnostic de pseudoanévrisme après qu'une échocardiographie bidimensionnelle eût révélé une cavité extra large jouxtant la région postérolatérale du ventricule gauche après un thrombus massif. Le diagnostic a été confirmé par imagerie par résonance magnétique quatre ans plus tard. La patiente a refusé la réfection chirurgicale et a continué de prendre de l'acide acétylsalicylique, un bêtabloquant et un antagoniste des récepteurs de l'angiotensine II. Elle était pratiquement asymptomatique et a été suivie tous les six mois jusqu'à ce qu'elle meure d'un carcinome de la vessie au cours de la sixième année. Le présent cas indique que l'opération ne constitue pas la seule possibilité thérapeutique chez les patients atteints d'un pseudoanévrisme ventriculaire.

left sternal edge. The patient's serial serum cardiac enzymes and serum troponin T levels were normal, and her blood cell count revealed severe anemia (red blood cell count of $1.67 \times 10^{12}/L$) and a hemoglobin concentration of 45 g/L. An electrocardiogram showed sinus tachycardia, generalized ST segment depression and T wave inversion in the precordial leads.

The patient was initially treated with a dopamine infusion (25 µg/kg/min) and fluid administration. However, her blood pressure remained low (30/0 mmHg). The central venous pressure was only 5 cmH₂O. Immediate blood transfusion and fluid administration through a subclavian vein were initiated. Subsequently, the patient's blood pressure rose to 120/80 mmHg and a hematological re-examination revealed that the hemoglobin concentration had increased to 94 g/L, with a red blood cell count of $2.92 \times 10^{12}/L$. Another 400 mL of fresh blood was transfused. Two days later, the patient was much improved except for an episode of atrial flutter. Fecal occult blood testing was negative on three occasions. On the seventh day, a chest radiograph was performed and showed enlargement of

¹Department of Cardiology, Shanghai Ninth Hospital, Jiao Tong University School of Medicine, Shanghai; ²Department of Cardiology, Anshan City Centre Hospital, No 6 Clinical College of China Medical University; ³Department of Internal Medicine, AnGang General Hospital, No 8 Clinical College of China Medical University, Anshan; ⁴Department of Cardiology, The First Affiliated Hospital, Soochow University, Suzhou, China

Correspondence: Dr Chaohui Jiang, Department of Cardiology, Shanghai Ninth Hospital, Shanghai Jiao Tong University School of Medicine, 639 Zhizhaou Road, Shanghai 200011, China. E-mail jiang_chaohui@yahoo.com.cn

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Figure 1) Magnetic resonance imaging of pseudoaneurysm (axial view). LV Left ventricle; PA Pseudoaneurysm; RV Right ventricle

the cardiac silhouette with bulging of the left heart border and prominent engorgement of the perihilar vessels. Transthoracic colour flow Doppler echocardiography showed normal dimensions of the left atrium and LV at end-diastole, with moderate depression of LV systolic function (ejection fraction 40%). There was also a giant extra chamber (approximately 51 mm × 79 mm) with echogenic masses adjacent to the posterolateral region of the LV. There was inferolateral pericardial effusion up to 2 cm in width with high acoustic densities. Colour flow Doppler echocardiography visualized the high-velocity, bidirectional flow of blood between the LV chamber and the pseudoaneurysm across a 7 mm orifice in the posterior LV free wall; blood flowed into the pseudoaneurysm in systole and reversed during diastole.

Because there was suspected massive thrombus in the pseudoaneurysm cavity, cardiac catheterization was not performed. The patient was by that time asymptomatic and refused consideration of surgical repair. She was discharged and prescribed acetylsalicylic acid, a beta-blocker and an angiotensin II receptor antagonist. Colour Doppler echocardiography was repeated after six months and showed similar findings. Magnetic resonance imaging (MRI) performed four years later showed a giant extra chamber (approximately 70 mm × 87 mm) adjacent to the posterolateral region of the LV, with a high-density gradient signal (Figures 1 and 2).

The patient had no other complications and was asymptomatic at assessments every six months. The patient died of carcinoma of the urinary bladder on the sixth year after the onset of cardiac rupture.

DISCUSSION

Pseudoaneurysm of the LV is rare and may occur as a result of transmural MI. Surgical resection is always recommended because of the risk of spontaneous and fatal rupture (3-5). However, two factors have to be taken into account when deciding whether routine surgical repair of a pseudoaneurysm should be undertaken. One factor is that the postoperative mortality after surgical repair of a pseudoaneurysm ranges from

Figure 2) Magnetic resonance imaging (sagittal view). LV Left ventricle; PA Pseudoaneurysm

13% to 29% and may be even higher in many hospitals due to a lack of experience (6-8). Another factor is the risk of fatal rupture with conservative treatment.

Taking into consideration the relatively high risk of stroke, chronic anticoagulant treatment, extended rest and strict blood pressure control should be considered. If the surgical risk is considered high, conservative management, including pericardiocentesis, may be an option (9,10). Furthermore, it has been hypothesized that the extent of an LV pseudoaneurysm may be limited by pre-existing pericardial adhesion, resulting in the development of a fibrin cap such that a thrombotic occlusion of the myocardial leak may occur (11).

Our patient presented with clinical features of shock suggesting upper gastrointestinal hemorrhage, and therefore needed a differential diagnostic approach. Once stabilized, the patient refused surgical therapy and was managed conservatively. Our patient illustrates the usefulness of echocardiography and MRI, which are equivalent to the invasive contrast technique (11,12). Although both methods are safe and specific for the diagnosis of an LV pseudoaneurysm, MRI has higher specificity and is more comprehensive (12-14).

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